

CLAIMS

1. A device for laying at least one thin layer of a powder (P) or powder mixture, the device being used to enable a laser to act on the material contained in a thermal enclosure, the device comprising storage means (8), powder or powder mixture feeder means (12), a deposition zone (9) for depositing said powder or powder mixture taken from said storage means, and means for compacting the powder or powder mixture deposited in said deposition zone, the device being characterized in that it comprises a circular cylinder (12) provided firstly with at least one groove (15) formed in an outside surface of said cylinder (12) and adapted to take powder or powder mixture from a storage means (8) and feed it to a deposition zone (9), and secondly with a surface (12a, 16a) adapted to compact the powder (P) or powder mixture previously deposited on said deposition zone (9), said cylinder (12), said storage means (8), said deposition zone (9), and the powder (P) or powder mixture being situated inside said enclosure that is suitable for being maintained at high temperature while enabling the cylinder (12) to be guided and driven from outside said enclosure.

2. A device according to claim 1, characterized in that said surface (12a, 16a) adapted for compacting comprises at least a fraction (12a, 16a) of an outside surface of said cylinder (12) in which at least one groove (15) is formed.

3. A device according to claim 1, characterized in that said groove (15) extends between the two ends of the cylinder (12), in a direction that is generally parallel to the longitudinal axis (AA') of said cylinder.

4. A device according to claim 1, characterized in that said groove (15) presents a cross-section that is generally in the configuration of a flat-bottomed V-shape.

5. A device according to claim 1, characterized in that the circumference of the cylinder (12) is perceptibly greater than the diameter of the deposition zone (9).

6. A device according to claim 1, characterized in that the roughness of the outside surface (12a) of said cylinder (12) is smaller than the roughness of the surface of said deposition zone (9), said roughness of the outside surface (12a) being adapted to the minimum grain size of the powder (P) used.

7. A device according to claim 1, characterized in that the enclosure and the elements (8, 9, 12, P) situated therein are maintained at a temperature that lies between ambient temperature and about 1200°C.

8. A device according to claim 1, characterized in that the positioning, guidance, and drive of the cylinder (12) are performed by positioning and guide means, and by an actuator situated outside the enclosure of the device.

9. A device according to claim 1, characterized in that flaps (20, 21) disposed in the flanks of the enclosure are movable in different directions relative to a plane (B) in which the longitudinal axis (AA') of the cylinder (12) moves when the cylinder is moved.

10. A device according to claim 9, characterized in that the flaps (20, 21) are of triangle shape (20) and of parallelogram shape (21), being disposed in a baffle configuration and in mutual contact so as to provide thermal isolation for the enclosure while allowing said cylinder to be connected to the positioning, guide, and drive members for said cylinder (12).